



ANNUAL TUBERCULOSIS REPORT OREGON 2009

Oregon Department of Human Services
Public Health Division
TB Program
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Table of Contents

Charts

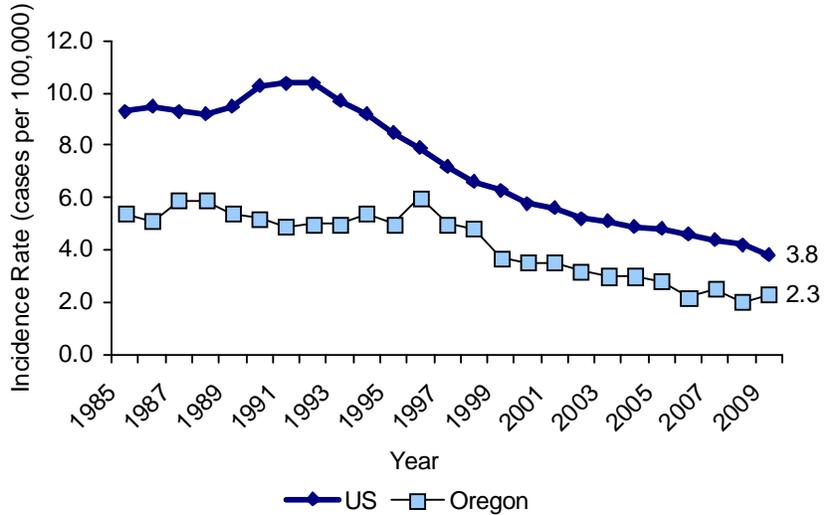
Chart 1	TB Incidence in the US and Oregon, 1985-2009.....	page 3
Chart 2	TB Cases by County, Oregon 2009.....	page 3
Chart 3	Number of TB Cases by Age Group and Foreign-born, Oregon 2009.....	page 4
Chart 4	Number of TB Cases by Sex, Oregon 1993-2009.....	page 4
Chart 5	Number of TB Cases by Race/Ethnicity, Oregon 2009.....	page 5
Chart 6	Number of TB Cases in Foreign-Born vs US-Born Residents, Oregon 1993-2009.....	page 5
Chart 7	Percentage of Foreign-Born Cases by Region of Birth, Oregon 2009.....	page 6
Chart 8	Reported Major Site of Disease, Oregon 2009.....	page 7
Chart 9	INH Drug Resistance and MDR Levels, Oregon 1993-2009.....	page 7
Chart 10	Risk Factors for TB Disease, Oregon 2009.....	page 8
Chart 11	Number of Homeless Cases, Oregon 1993-2009.....	page 8
Chart 12	TB Cases by HIV Status, Oregon 2009.....	page 9
Chart 13	Percent Completion of Treatment within 1 Year for Eligible Cases, Oregon 1993-2008....	page 9
Chart 14	Mode of TB Therapy, Oregon 1993-2008.....	page 10

Tuberculosis incidence

Tuberculosis (TB) disease incidence has been generally declining in both the US and Oregon for the past decade. While national rates experienced an unprecedented drop from 2008 to 2009, Oregon's TB disease rate climbed slightly from an all-time low in 2008.

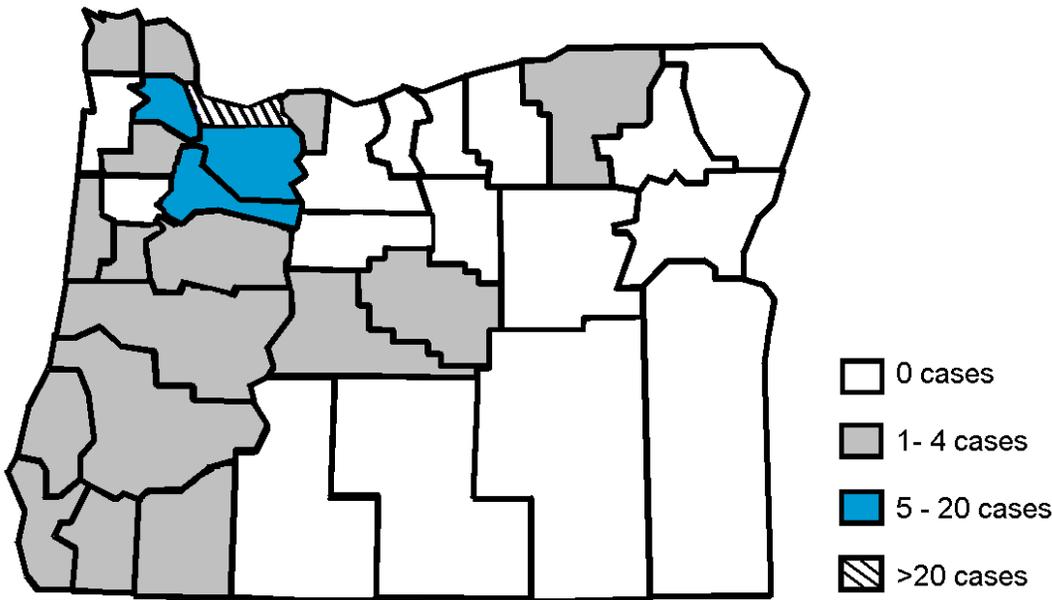
There were 89 cases in Oregon in 2009, up from 75 cases in 2008. Oregon's TB disease incidence rose from 2.0 to 2.3 cases per 100,000, while US incidence dropped from 4.2 to 3.8 cases per 100,000 over the same period.

Chart 1. TB Incidence in the US and Oregon, 1985-2009



Tuberculosis cases by county

Chart 2. TB Cases by County, Oregon 2009



The majority of Oregon's TB cases in 2009 were from Multnomah, Washington, and Marion counties.

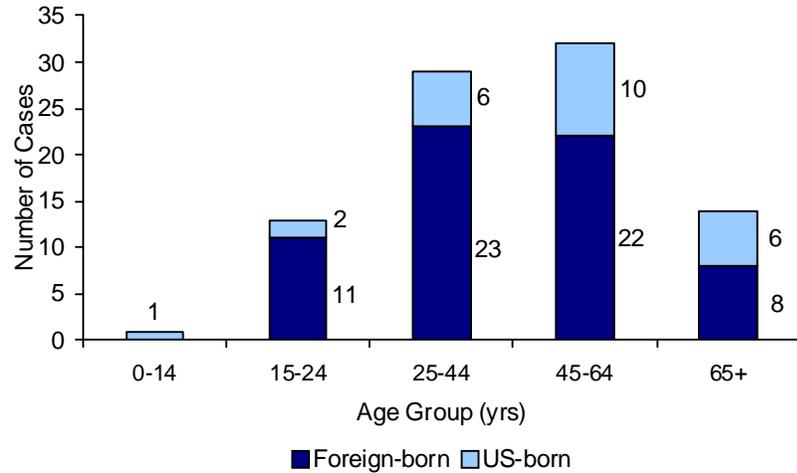
During 2009, 89 cases of TB were reported in Oregon. The three counties with the most cases were Multnomah (n=30), Washington (n=19), and Marion (n=13). Clackamas County had 5 cases. Overall, twenty counties reported at least one TB case in 2009. This is an increase over 2008 (11 counties reporting cases), 2007 (17 counties with cases) and 2006 (16 counties with cases).

Tuberculosis by age group

In 2009, most active TB cases occurred in adults 25 years of age or older. The 45-64 year old age group contained the largest percentage of cases (36%), with 32 cases. The mean and median case ages were both 45 years.

Only one case of pediatric TB was reported in 2009. This case was US-born, of Philippino origin. The percentage of foreign-born cases was highest among 15-24 year olds (85%), decreasing with age to 57% foreign-born in the 65+ age group.

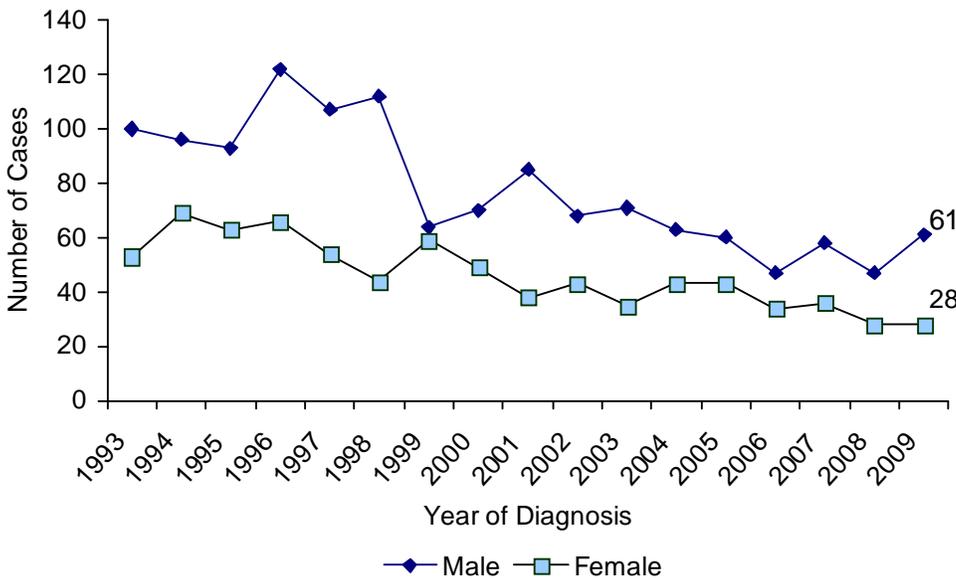
Chart 3. Number of TB Cases by Age Group and Foreign-born, Oregon 2009



Tuberculosis by sex

TB incidence historically has been higher among males than females. In 2009, males represented 69% (n=61) of all TB cases in Oregon. This predominance of TB among males has also been seen in the US and globally. Possible reasons for this finding may include differences in access to care, underlying susceptibility to TB, or distribution of TB risk factors, such as homelessness and substance abuse.

Chart 4. Number of TB Cases by Sex, Oregon 1993-2009



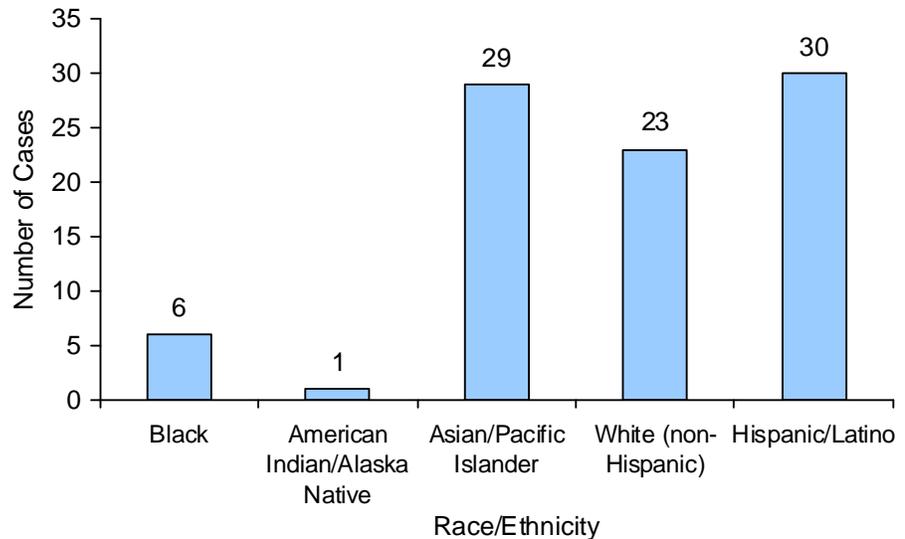
TB incidence is higher among males than females.

Tuberculosis by race/ethnicity

During 2009, 30 cases (34%) reported Hispanic or Latino ethnicity. Twenty-nine cases (33%) self-identified as Asian or Pacific Islander. Twenty-three cases of TB were reported among non-Hispanic whites, and six cases were reported among blacks. One case identified as American Indian.

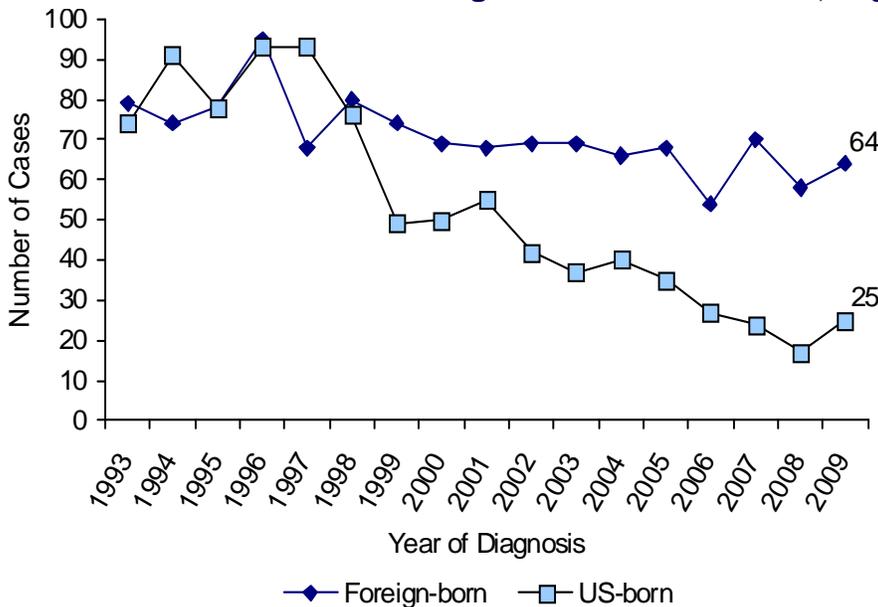
Percent foreign-born varied by race/ethnicity. Eighteen of 23 cases among whites were US-born (78%), whereas cases among the other racial/ethnic groups were predominately foreign-born. In the Asian/Pacific Islander group, nearly all cases were foreign-born (93%, 27 of 29), and most among the Hispanic racial/ethnic group were foreign-born (93%, 28 of 30). Four of six (67%) cases identifying as black were foreign-born.

Chart 5. Number of TB Cases by Race/Ethnicity, Oregon 2009



TB cases by place of origin

Chart 6. Number of TB Cases in Foreign-Born vs US-Born Residents, Oregon 1993-2009



In 2009, slightly under 3/4 of Oregon's TB cases were foreign-born.

In Oregon, the number of cases among US-born has been generally decreasing. However, the case count among foreign-born has remained relatively stable. This has resulted in an increasing proportion of Oregon's TB cases occurring in the foreign-

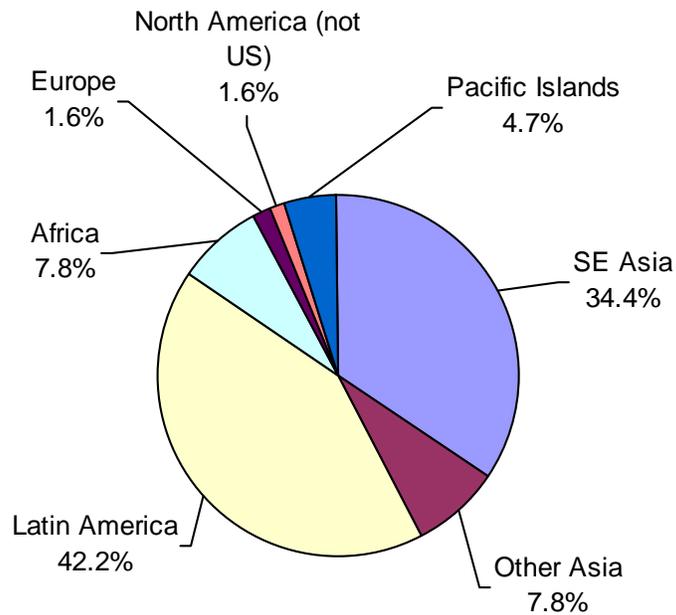
born population. In 2009, 64 (72%) of the 89 TB cases were among foreign-born persons, a slightly lower percentage than in 2008 (77%).

Tuberculosis by region of birth

Chart 7. Percentage of Foreign-Born Cases by Region of Birth, Oregon 2009

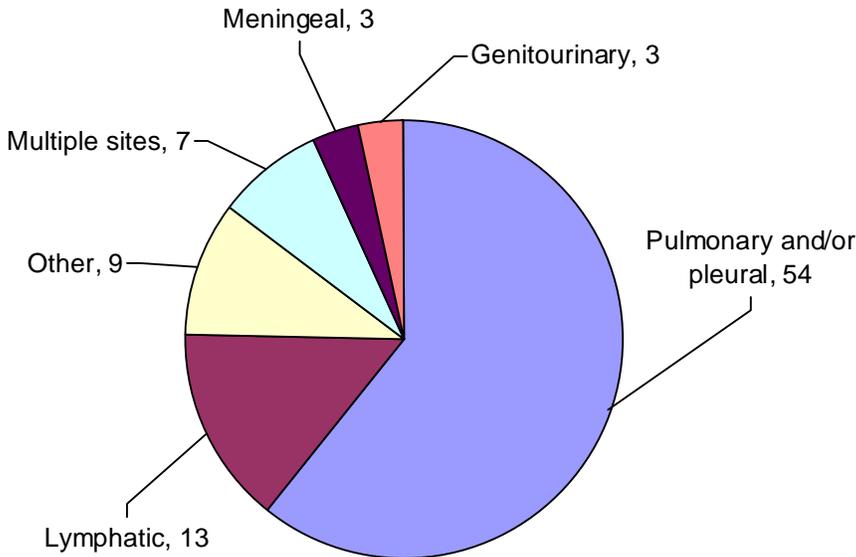
In 2009, 72% of Oregon's TB cases were reported to be foreign-born (n=64).

- While half of all 2008 foreign-born cases were from Asia, in 2009, a smaller percentage came from this continent (42%, n=27). Cases born in SE Asia accounted for 34% of all foreign-born cases and included 10 cases from Vietnam, 8 from the Philippines, and 2 each from Cambodia and Myanmar.
- 42% (n=27) of foreign-born cases in 2009 came from Latin America, a higher percentage than in 2008. This included 25 cases from Mexico and 1 each from Peru and Guatemala.
- Five cases were from Africa (8%), four of whom were from East Africa (Ethiopia, Somalia, or Kenya).
- One case (1.6%) was originally from Europe (Estonia), and one was from North America (Greenland).
- The three cases from the Pacific Islands were from Micronesia (n=2) and the Marshall Islands (n=1).



Tuberculosis cases by major site of disease

Chart 8. Reported Major Site of Disease, Oregon 2009



In 2009, 54 (61%) of Oregon's 89 TB cases reported pulmonary and/or pleural as the major site of disease. There were 13 lymphatic cases (15%) and seven cases that had TB in multiple sites (8%). Among all cases with any pulmonary involvement, 56% were sputum-smear positive. Sputum-smear positivity as well as cavitation on chest x-ray are strong indicators of infectiousness; 14 of the 89 cases (16%) had chest-x-rays read as cavitory (all pulmonary cases).

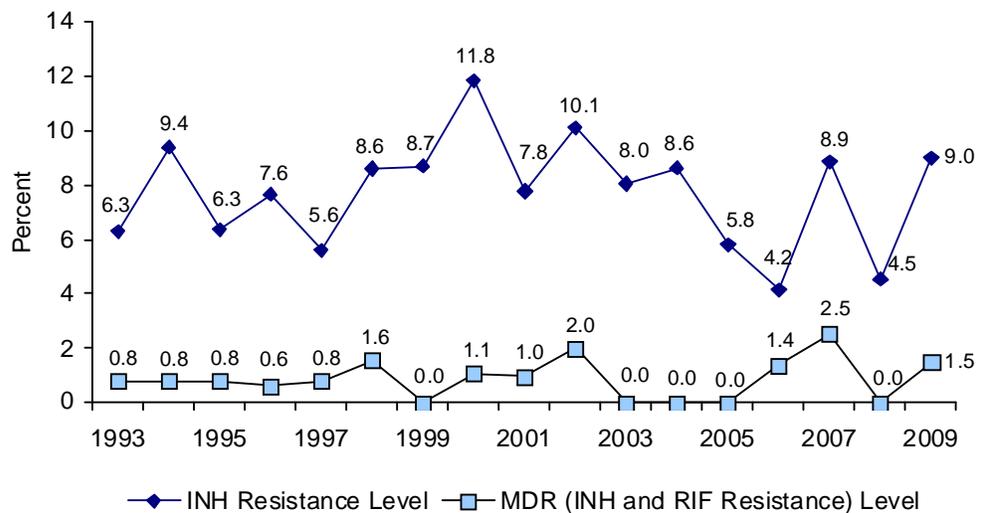
Drug resistance and TB

Chart 9. INH Drug Resistance and MDR Levels, Oregon 1993-2009

Isoniazid (INH) drug resistance levels in Oregon TB cases have ranged from 4% to 12% over time. In 2009, 9% of cases for whom susceptibility testing was performed were resistant to INH (6 of 67 cases with drug susceptibility testing results). The US average is similar, at 8% (2008 data*).

Since 1993, only 15 cases of multi-drug resistant TB (MDR TB,

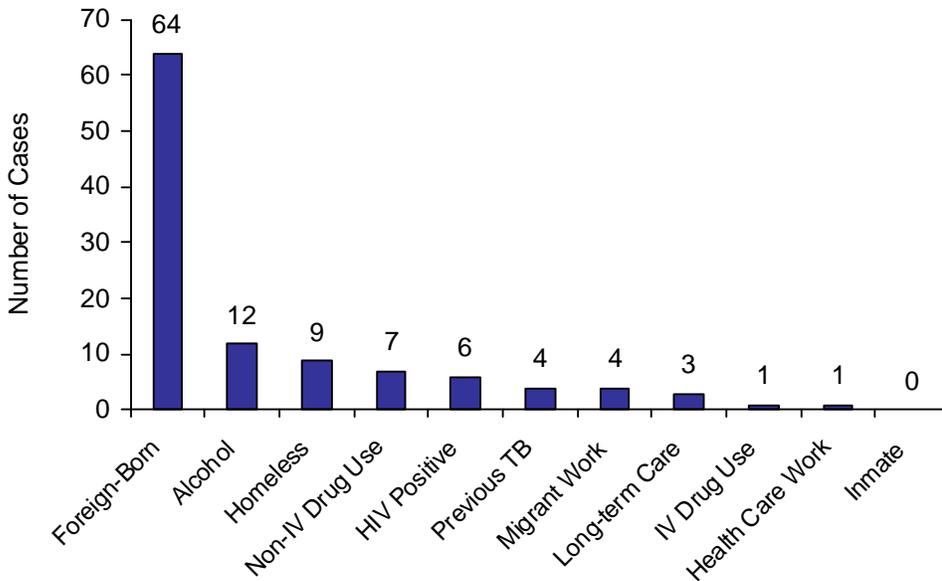
or TB that is resistant to both INH and rifampin) have been reported in Oregon; 14 (93%) were among foreign-born. The MDR TB rate in the US was 1.1% in 2008*. In 2009, Oregon reported one case of MDR TB. To date, no cases of XDR (extensively drug resistant) TB have been reported in Oregon.



*http://www.cdc.gov/tb/statistics/reports/2008/pdf/7_MorbRA08and06.pdf

Risk factors and tuberculosis disease

Chart 10. Risk factors for TB Disease, Oregon 2009



The most prevalent risk factor among Oregon's TB cases is foreign birth.

In 2009, the most common risk factor by far among Oregon's TB cases continued to be foreign-born status, found in 72% of all cases. About 13% of cases reported excess alcohol use. Nine cases were homeless (10%), and seven

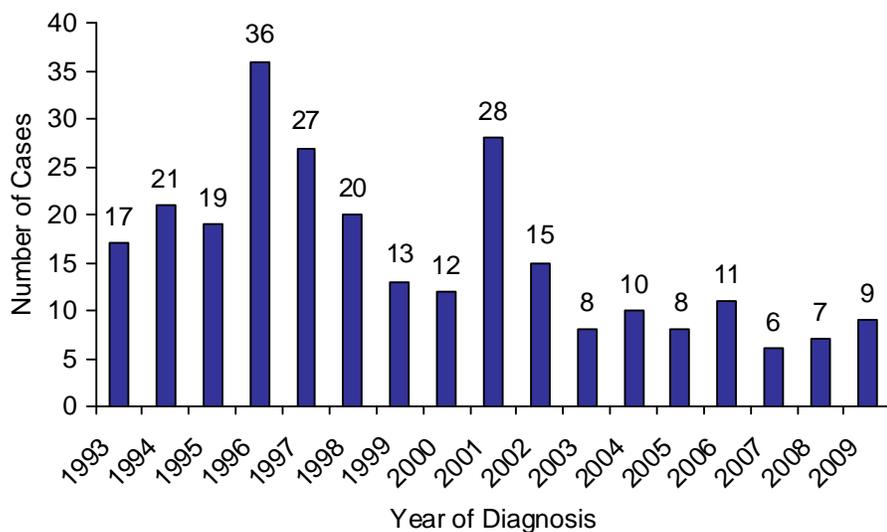
reported non-IV drug use (8%). Six cases were HIV positive. Four cases had a previous diagnosis of TB, and four more were migrant workers. Three cases were diagnosed in long term care facilities. One case reported IV drug use, and one worked in a health care setting.

Tuberculosis in the homeless

Overall, the number of Oregon TB cases among the homeless has been decreasing. In 2009, 9 cases (10% of all cases) reported homelessness in the year prior to diagnosis.

A spike in the number of homeless cases occurred in 2001, due to a homeless shelter outbreak in Lane County; 18 of the 28 homeless cases that year were from Lane County. Cases with the 2001 Lane County outbreak strain continue to arise sporadically. Genotyping has confirmed that one of the nine homeless cases in 2009 is a possible match to this outbreak strain.

Chart 11. Number of Homeless Cases, Oregon 1993-2009

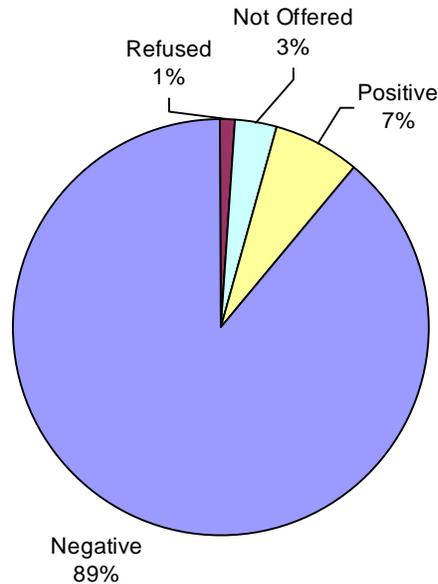


HIV and tuberculosis

HIV status was obtained for 85 of the 89 (96%) active TB cases reported in Oregon in 2009. Six cases (7%) were HIV positive, which is right around the estimated national rate for TB/HIV coinfection (6% in 2008).

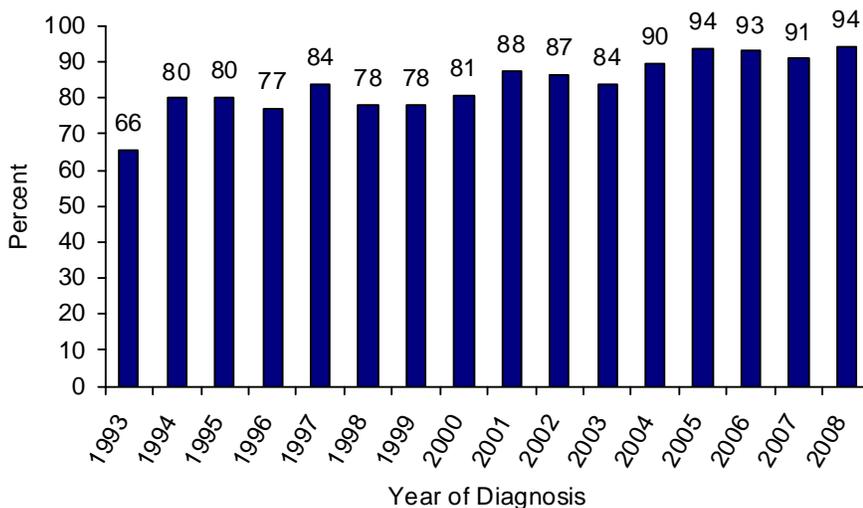
HIV status was not obtained for four individuals: one refused testing, and three were not offered testing. Included among those not offered testing was one case that was deceased at the time of TB diagnosis, and two individuals who had a test result outside the time frame acceptable under surveillance definitions.

Chart 12. TB Cases by HIV Status, Oregon 2009



Completion of TB treatment

Chart 13. Percent Completion of Treatment within 1 Year for Eligible Cases, Oregon 1993-2008



In 2007, 91% of eligible cases completed treatment within one year. In 2008, 94% of eligible cases completed treatment within one year (2008 data are provisional).

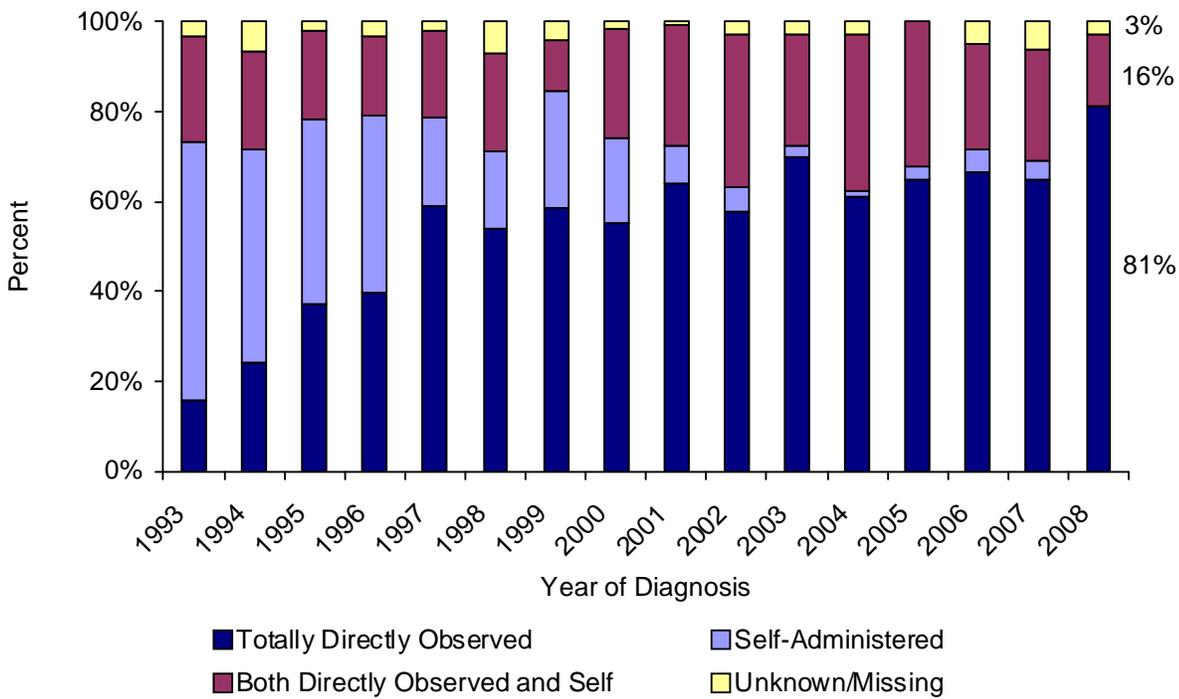
Patients who died during treatment were excluded from the calculation. Patients with resistance to rifampin, patients with meningeal TB (regardless of age) and children under age of 15 with disseminated TB (defined as miliary and/or positive blood culture), were also excluded due to expected longer duration of treatment.

Delivery of TB Therapy

Directly observed therapy, or DOT, is the standard of care in Oregon for treatment of TB. The use of self-administered therapy alone for treatment of TB has decreased since 1993, dropping from 47% to 0% in 2008. Use of directly observed therapy has increased over the years.

In 2008, 81% of all cases received full DOT, and another 16% received a combination of both DOT and self-administered therapy.

Chart 14. Mode of TB Therapy, Oregon 1993-2008



Technical Notes:

The data presented in this report come from Oregon's Tuberculosis Information Management System (TIMS, data through 2008) and the Oregon Public Health Epi User System (Orpheus, data collected starting in 2009). Data are as of June 2010.

Percentages may not sum to 100 due to rounding.

Age is calculated based on date case is reported to the local health department.

Surveillance Case Definition for Oregon:

1. Laboratory Case Definition

- a. Isolation of M. Tuberculosis Complex from a culture of a clinical specimen, using an FDA approved test
or
- b. Demonstration of M. Tuberculosis from a clinical specimen using FDA approved Nucleic Acid Amplification Test (NAAT) (a positive test means that the probe detected ribosomal RNA of the M. tuberculosis complex in the clinical specimen)
 - i. Genprobe® MTD (Mycobacterium Direct Test) of respiratory specimen
 - ii. Amplicor® Mycobacterium Tuberculosis Test of respiratory specimen

2. Clinical Case Definition*

- a. Full diagnostic evaluation
 - i. Tuberculin Skin Test (TST) or Interferon Gamma Release Assay (IGRA) test
 - ii. Chest X-ray/imaging
 - iii. Clinical specimens for culture/NAAT
 - iv. Risk factor evaluation: host factors (e.g. documented immunosuppression) and environmental factors (e.g. contact to an active case, born in a country with endemic TB, travel to endemic country)**and**
- b. Lab test indicative of infection
 - i. Positive TST **and/or**
 - ii. Positive IGRA or
 - iii. Negative TST or IGRA with reason for not positive (immunosuppression)**and**
- c. Signs or symptoms compatible with TB disease
and
- d. Improvement of signs or symptoms after treatment with 2 or more anti-TB drugs

* Factors including pretest risk, other potential diagnoses, opportunity to improve on TB treatment, and site of disease (pulmonary vs extrapulmonary) may also be considered in the decision to count a clinical case.

For more information on tuberculosis or TB in Oregon, please visit our website at:

<http://www.oregon.gov/DHS/ph/tb/index.shtml>

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